U.S. DEPARTMENT OF COMMERCE PATENT & TRADEMARK OFFICE

B/O Form PTO-1390 **Transmittal Letter to the United States Designated/Elected Office (DO/EO/US) Concerning a Filing Under *35 USC 371***		*Attorney's Docket Number* EKLU3001/JEK
		U S Application Number (if known) 10/069115
International Application Number PCT/SE00/01628	*International Filing Date* 24 August 2000	*Priority Date Claimed* 31 August 1999
Title of Invention METHOD AND DEVICE FOR DETERMINING THE INTRAOCULAR PRESSURE, BY MEASURING THE CHANGING OF THE FREQUENCY CHARACTERISTICS		
Applicant(s) for DO/EO/US Anders EKLUND et al.	Assignee	

Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items under *35 USC 371*:

1. ☒ This is a **FIRST** submission of items concerning a filing under *35 USC 371*.

2. ☐ This is a **SECOND** or **SUBSEQUENT** submission of items concerning a filing under *35 USC 371*.

3. ☒ This express request to begin national examination procedures *(35 USC 371(f))* at any time rather than delay examination until the expiration of the applicable time limit set in *35 USC 371(b)* and PCT Articles 22 and 39(1).

4. ☒ A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date.

5. ☒ A copy of the International Application as filed *35 USC 371(c)(2)*.
   a. ☐ is transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☒ has been transmitted by the International Bureau.
   c. ☐ is not required, as the application was filed in the United States Receiving Office (RO/US).

6. ☐ A translation of the International Application into English *(35 USC 371(c)(2))*.

7. ☒ Amendments to the claims of the International Application under PCT Article 19 *(35 USC 371(c)(3))*
   a. ☐ are transmitted herewith (required only if not transmitted by the International Bureau).
   b. ☐ have been transmitted by the International Bureau.
   c. ☐ have not been made; however, the time limit for making such amendments has NOT expired.
   d. ☒ have not been made and will not be made.

8. ☐ A translation of the amendments to the claims under PCT Article 19 *(35 USC 371(c)(3))*.

9. ☒ An oath or declaration of the inventor(s) *(35 USC 371(c)(4))*. (☐ Executed ☒ Unexecuted)

10. ☐ A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 *(35 USC 371(c)(5))*.

Items 11 to 16 below concern other document(s) or information included:

11. ☐ An Information Disclosure Statement under *37 CFR 1.97* and *1.98*.

12. ☐ An assignment document for recording. A separate cover sheet in compliance with *37 CFR 3.28* and *3.31* is included.

13. ☒ A **FIRST** preliminary amendment.
    ☐ A **SECOND** or **SUBSEQUENT** preliminary amendment.

14. ☐ A substitute specification.

15. ☐ A change of power of attorney and/or address letter.

16. ☒ Other items or information: Application Data Sheet; 1 sheet formal drawing

Application Number (if Known)	International Application Number	Attorney's Docket Number
10/069115	PCT/SE00/01628	EKLU3001/JEK

	Calculations	PTO USE ONLY
17. The following fees are submitted: **Basic National Fee *(37 CFR 1.492(a)(1)-(5))*:** ☐ Search report has been prepared by the EPO or JPO . . . . . $890.00 ☐ International Preliminary Examination Fee paid to USPTO *(37 CFR 1.482)* . . . . . $710.00 ☐ No International Preliminary Examination Fee paid to USPTO *(37 CFR 1.482)* but International Search Fee paid to USPTO *(37 CFR 1.445(a)(2))* . . . . . $740.00 ☒ Neither International Preliminary Examination Fee *(37 CFR 1.482)* nor International Search Fee *(37 CFR 1.445(a)(2))* paid to USPTO . . . . . $1040.00 ☐ International Preliminary Examination Fee paid to USPTO *(37 CFR 1.482)* and all claims satisfied provisions of PCT Article 33(1)-(4) $100.00		
ENTER APPROPRIATE BASIC FEE AMOUNT	**$ 1,040.00**	
Surcharge of **$130.00** for furnishing the oath or declaration later than ☐ 20 ☐ 30 months from the earliest claimed priority date *(37 CFR 1.492(e))*.		

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total Claims	14 -20 =		× $18.00		
Independent Claims	2 -3 =		× $84.00		
Multiple Dependent Claims (if applicable)			+ $280.00	$ 280.00	
TOTAL OF ABOVE CALCULATIONS				**$ 1,320.00**	
Reduction by ½ for filing by small entity, if applicable. Small Entity Status is asserted pursuant to 37 CFR 1.27 for this application.				$ 660.00	
SUBTOTAL				**$ 660.00**	
Processing fee of **$130.00** for furnishing the English translation later than ☐ 20 ☐ 30 months from the earliest claimed priority date *(37 CFR 1.492(f))*.					
TOTAL NATIONAL FEE				**$ 660.00**	
Fee for recording the enclosed assignment *(37 CFR 1.21(h))*. The assignment must be accompanied by an appropriate cover sheet *(37 CFR 3.28, 3.31)*. **$40.00** per property.					
TOTAL FEES ENCLOSED				**$ 660.00**	
Amount to be:				Refunded:	
				Charged:	

a. ☒ A check in the amount of **$660.00** to cover the fees is enclosed.

b. ☐ Please charge my **Deposit Account Number 02-0200** in the amount of $ _____ to cover the above fees. A duplicate copy of this sheet is enclosed.

c. ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to **Deposit Account Number 02-0200**. A duplicate copy of this sheet is enclosed.

Note: Where an appropriate time limit under *37 CFR 1.494* or *1.495* has not been met, a petition to revive *(37 CFR 1.137(a) or (b))* must be filed and granted to restore the application to pending status.

Customer 23364

BACON & THOMAS, PLLC
625 SLATERS LANE - FOURTH FLOOR
ALEXANDRIA, VIRGINIA 223124-1176
(703) 683-0500

DATE: 28 February 2002

Respectfully submitted,

/Ernest Kenney/
Attorney for Applicant
Registration Number: 19,179

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

International Patent Application No. PCT/SE00/01628

PCT/DO/EO/US

International Filing Date: 24 August 2000

Attorney Docket: EKLU3001/JEK

Applicant: Anders EKLUND et al.

For: METHOD AND DEVICE FOR DETERMINING THE INTRAOCULAR PRESSURE, BY MEASURING THE CHANGING OF THE FREQUENCY CHARACTERISTICS

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

This paper accompanies documents submitted to establish the U.S. national stage of the above-identified international patent application.

The claims were not amended during the international phase. Before calculation of the filing fee and before examination, please amend the application as follows:

IN THE CLAIMS:

Please amend the original as-filed claims as shown on the appended APPENDIX OF CLAIMS, which includes amended and non-amended claims. Also appended hereto an APPENDIX OF MARKED UP CLAIMS showing the changes which have been made.

REMARKS

All rights are reserved to the original claimed subject matter. The claims have been amended to reduce the filing fees and to restate the inventive subject matter in clear terms. None of the amendments are intended to narrow any element of the

claims as they stood prior to amendment. Examination of the application as amended is respectfully requested.

Respectfully submitted,
BACON & THOMAS, PLLC

J. ERNEST KENNEY
Attorney for Applicant
Registration No. 19,179

Customer 23364

BACON & THOMAS, PLLC
625 Slaters Lane - 4th Floor
Alexandria, VA 22314-1176
Telephone: (703) 683-0500
Facsimile: (703) 683-1080

Date: February 28, 2002

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International Application No. PCT/SE00/01628
Attorney Docket: EKLU3001/JEK

APPENDIX OF CLAIMS

1(Amended). Method for measuring the pressure *p* in an eye, the so-called intraocular pressure, that includes a contact body with a known geometry, being pressed against the eye with a gradually increasing force *F* and that when the area of deformation of the eye *A* can be determined, the pressure can be obtained from the correlation, $P = F/A$ characterised in that the frequency characteristic (f_{char}) of a contact body associated with a sensor system oscillating in resonance is read, that the contact body is pressed against the eye to form a new system oscillating in resonance, that the contact force and frequency characteristic for the new system is read, and that the change in frequency characteristic is calculated, whereby the pressure of the eye can then be determined since the deformation area *A* sought is a function of the change $A(f_{char})$.

2. Method according to claim 1 characterised in that the force with which the contact body is pressed against the eye is chosen depending on the pressure of the eye, so that a lower pressure is determined with a lower contact force against the eye and a higher pressure is determined with a higher contact force, whereby a high degree of measurement accuracy is obtained with a minimal contact force over a large pressure interval.

3. Method according to claim 1 characterised in that the frequency characteristic is read continuously, that the contact force *F* is increased until a desired change in the frequency characteristic f_{char} has been reached, that the contact force *F* is read and that the pressure is determined as a function of the contact force *F* at a specified change of frequency characteristic f_{char}.

4. Method according to claim 1 or 3 characterised in that repeated readings of the contact force *F* and frequency characteristic are made while the contact body is pressed against the eye, whereby a series of measurement values are obtained.

5(Amended). Method according to claim 1 characterised in that the frequency characteristic is described by one of either the change in resonance frequency for the change in phase φ.

6(Amended). Device for measuring the internal pressure in an eye, the so-called intraocular pressure, having a contact body (4) for pressing against the eye (1) and a means (3) of determining the force with which the contact body is pressed against the eye, characterised in that the contact body (4) is part of a system oscillating in resonance, and that the resonance system is connected to a frequency characteristic reading device of the system.

7. Device according to claim 6 characterised in that the system oscillating in resonance includes a piezo-electric element.

8(Amended). Device according to claim 6 or 7 characterised in that the contact body (4) has a flat surface of contact (5) and that the contact surface preferably has a structure or a pattern.

9(Amended). Device according to claim 6 characterised in that it includes a device arranged to calculate the change in frequency characteristic.

10(Amended). Device according to claim 6 or 7 characterised in that the contact surface (5) is concave, preferably with a radius of curvature that exceeds the radius of curvature of the surface of the eye against which it is intended to be pressed.

11. Use of the device according to claim 6 for measuring pulsation in the intraocular pressure.

International Application No. PCT/SE00/01628
Attorney Docket: EKLU3001/JEK

APPENDIX OF MARKED-UP VERSION OF CLAIMS

1(Amended). Method for measuring the pressure *p* in an eye, the so-called intraocular pressure, that includes a contact body with a known geometry, being pressed against the eye with a gradually increasing force *F* and that when the area of deformation of the eye *A* can be determined, the pressure can be obtained from the correlation, $P = F/A$ characterised in that the frequency characteristic (f_{char}) of a contact body associated with a sensor system oscillating in resonance is read, that the contact body is pressed against the eye to form a new system oscillating in resonance, that the contact force and frequency characteristic for the new system is read, and that the change in frequency characteristic is calculated, whereby the pressure of the eye can then be determined since the deformation area *A* sought is a function of the change $A(f_{char})$.

5(Amended). Method according to [any of claims 1 - 4] claim 1 characterised in that the frequency characteristic is described by one of either the change in resonance frequency for the change in phase φ.

6(Amended). Device for measuring the internal pressure in an eye, the so-called intraocular pressure, having a contact body (4) for pressing against the eye (1) and a means (3) of determining the force with which the contact body is pressed against the eye, characterised in that the contact body (4) is part of a system oscillating in resonance, and that the resonance system is connected to a [means (9) for reading the] frequency characteristic reading device of the system.

8(Amended). Device according to claim 6 or 7 characterised in that the contact body (4) has a flat surface of contact (5) and that the contact surface preferably has a structure [5] or a pattern.

9(Amended). Device according to [any of claims 6 to 8] claim 6 characterised in that [a means is arranged for calculating] it includes a device arranged to calculate the change in frequency characteristic.

10(Amended). Device according to [any of claims 6 or 7] claim 6 or 7 characterised in that the contact surface (5) is concave, preferably with a radius of curvature that exceeds the radius of curvature of the surface of the eye against which it is intended to be pressed.

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Method and device for determining the intraocular pressure, by measuring the changing of the frequency characteristics.

The present invention relates to a method and device for determining the internal pressure in an eye, the so-called intraocular pressure (IOP).

As long-term increased pressure in the human eye can lead to blindness, the pressure is routinely measured at all eye clinics. An applanation method is normally used at the clinic, e.g. the so-called Goldman applanation tonometer, which means that a probe is brought to press against the eye until a predetermined deformation is reached and the force required is read.

The basis of the pressure determination is then the known relation between pressure, force and area:

$P=F/A$ where P=pressure, F=force and A=area

The internal pressure of the eye can thus be calculated from the contact force against the eye and the area of deformation of the eye.

To establish that a specified deformation (area) has been reached, a fluorescent chemical is introduced to the eye and the eye is illuminated so that changes in light reflection at deformation can be read.

Another method is used when the demand on accuracy is not so high. It is a method where a jet of pressurised air is used to deform the eye with a specified force, whereby the deformation is read by detecting light reflections. This method has no physical contact between a fixed object and the eye.

Both methods are based on a force deforming the eye, which the patient can experience as being uncomfortable or painful, even though local anaesthetic is used with, for example, the Goldman method.

In addition, the former method has shown to be sensitive to astigmatism, as light refraction is always employed during measurement of the deformation of the eye. The latter method has documented shortcomings in precision and is thus not used when the nominal pressure is to be determined, but is often used instead by opticians, etc., for an initial measurement of the magnitude of the pressure.

There is always a risk of damaging the eye, especially the cornea, when the eye is pressed. This is one reason why it is desirable to minimise the contact force against the eye. The lowest force possible is determined according to the equation above by the area or deformation that is needed for this area to be correctly detected. The light reflection method that is used to detect or read the area of deformation requires a relatively large area for a correct reading and thus an equivalent relatively large force.

It is the aim of the present invention to alleviate or overcome the disadvantages stated above for known methods and devices for measuring the internal pressure in an eye.

This aim is achieved with a method and device that is first mentioned above and that has the characteristics that are defined in the following independent claims.

These and further characteristics and advantages of the invention will become evident from the following detailed description of preferred embodiments of the invention, which constitute an example and as such are not limiting for the scope of protection of the invention. To simplify understanding, the text includes references to an enclosed drawing. Fig. 1 shows schematically parts in a device according to one embodiment of the invention.

According to the present invention, a vibrating or oscillating contact body is pressed against the eye to determine the deformation of the eye.

We have found that changes in the frequency characteristic, between on the one hand a system oscillating in resonance and on the other hand the system partly brought into contact with an eye to form a new system oscillating in resonance, are dependent on the surface area of the contact.

One method for determining the pressure p in an eye, the so-called intraocular pressure, includes a contact body with known geometry being pressed against the eye with a progressively increasing force F and that when the deformation area A of the eye has been determined, the pressure is obtained from the relation $P=F/A$. New for the invention is to read the frequency characteristic f_{char} of a, to the contact body associated, sensor system oscillating in resonance, to thereafter press the contact body against the eye to form a new system oscillating in resonance, to read the contact force and the frequency characteristic for the new system, and to calculate the change in the frequency characteristic, whereby the pressure of the eye can be determined since the sought deformation area A is a function of the change $A(f_{char})$, calibrated for the actual sensor system. Calibration of the measurement instrument and measurement devices constitutes known moments and will therefore not be described in greater detail here.

The force with which the contact body is pressed against the eye can thus be adapted depending on the pressure of the eye so that a lower pressure is determined with a lower contact force against the eye and a higher pressure is determined with a higher contact force, whereby a high precision of measurement is obtained with minimum contact force over large intervals of pressure.

In an alternative embodiment, the frequency characteristic can be read continuously and the contact force F against the eye can be increased until a desired change in

the frequency characteristic Δf_{char} has been reached, whereby the contact force F can be read and the pressure calculated as a function of the contact force F at a specific change in the frequency characteristic f_{char}.

In a further embodiment, repeated readings can be made of the contact force F and the frequency characteristic while keeping the contact body pressed against the eye, whereby a series of measured values are obtained. A series of measured values increases the possibility of identifying and discarding measured values that fall outside the range of reliable measurements, for example, because the contact force was too low or because the force was so large that the deformation formed became larger than the area of contact.

During measurement and calculation of the frequency characteristic, components such as resonance frequency or phase can, for example, be used.

The enclosed figure shows schematically a device according to one embodiment of the present invention. The device shows a sensor 1 arranged in position to measure the intraocular pressure in an eye 2. The sensor 1 is supported by an arrangement 3 for regulating the pressing of the sensor 1 against the eye. Arrangement 3 can control the force with which the sensor is pressed against the eye.

The sensor includes a contact body 4 having a contact area 5 that abuts the eye.

The contact body is supported in the sensor by, or it forms an integrated part of, an oscillating unit. In the embodiment shown, the oscillating unit 7 is a piezo-electric element. The piezo-electric element is appropriately suspended in a casing 10 that allows the piezo-electric element to swing as freely as possible. Attached to the piezo-electric element 7 is a smaller piezo-electric element 6, a so-called pick-up, firmly fixed, which is used to capture the oscillations in the piezo-electric element.

A means of driving is connected to the oscillating unit 7 to achieve its oscillating movement. In the present embodiment, a feedback circuit 8 is connected to the piezo-electric element 7 to feed back the oscillations registered by the pick-up 6 and to achieve a resonance oscillation in the system.

In the embodiment shown schematically in the figure, the piezo-electric element 7 is connected to earth and to a band-pass filter BP. The pick-up 6 is glued firmly to the piezo-electric element 7 and connected to an amplifier Am, which in turn is connected to the band-pass filter BP for feed-back. Am and BP are tuned for optimal oscillation conditions, i.e. resonance frequency.

In addition, a means 9 for reading the frequency characteristic is connected to the system. This can be an ordinary frequency counter or another instrument suitable for signal processing.

Furthermore, it is advantageous if a calculator unit 11 is connected to the frequency counter for calculating the frequency difference.

In this embodiment, the contact surface is flat. The surface can, for example, be provided with a structure or pattern to displace the tear fluid. The contact surface can also be made concave with a radius of curvature that exceeds that of the surface of the eye against which it is intended to be pressed.

In a further embodiment, the contact surface can also be made convex. This is preferable when, for example, measuring the pressure of an eye that has a flat cornea. Flat corneas can, for example, be the result for someone who has undergone correction of their sight by smoothing the cornea by treatment with a laser, for example.

The contact body should be made of an electrically insulating material that prevents galvanic connections between the piezo-electric element and the eye. The contact body can advantageously be made of a polymer material. In addition, the contact body should have acoustic properties that allow frequencies to be transmitted to the eye. The piezo-electric element should be encased to avoid galvanic connections between the piezo-electric element and body of the patient or the treating person.

When the system is brought to oscillate in resonance and the frequency characteristic of the system has been read, the system is ready for measurement. Contact surface 5 is brought oscillating against an eye whose pressure is to be determined. The contact force and the frequency characteristic for the system then oscillating in resonance are then read. One or more readings can be taken for each occasion of measurement.

With the help of the previously made calibrations of the sensor system, the contact area can be interpreted from changes in frequency characteristic $A(f_{char})$ and the pressure of the eye can be established.

To obtain reliable values, the area of the contact surface (5) must exceed that area that is formed when pressing against the eye.

The advantage of the method described here is obvious as it does not require a predetermined area of deformation and thus no lower limit of contact force for determining the pressure. Furthermore, the use of fluorescent chemicals in the eye is avoided.

As the device can be used for continuous measuring and gathering of information, it is also possible to study the pulsation in the intraocular pressure during a period of measurement. This pulsation can be affected by different underlying illnesses.

Claims

1. Method for measuring the pressure p in an eye, the so-called intraocular pressure, that includes a contact body with a known geometry, being pressed against the eye with a gradually increasing force F and that when the area of deformation of the eye A can be determined, the pressure can be obtained from the correlation, $P=F/A$ characterised in that the frequency characteristic of a contact body associated with a sensor system oscillating in resonance is read, that the contact body is pressed against the eye to form a new system oscillating in resonance, that the contact force and frequency characteristic for the new system is read, and that the change in frequency characteristic is calculated, whereby the pressure of the eye can then be determined since the deformation area A sought is a function of the change $A(f_{char})$.

2. Method according to claim 1 characterised in that the force with which the contact body is pressed against the eye is chosen depending on the pressure of the eye, so that a lower pressure is determined with a lower contact force against the eye and a higher pressure is determined with a higher contact force, whereby a high degree of measurement accuracy is obtained with a minimal contact force over a large pressure interval.

3. Method according to claim 1 characterised in that the frequency characteristic is read continuously, that the contact force F is increased until a desired change in the frequency characteristic f_{char} has been reached, that the contact force F is read and that the pressure is determined as a function of the contact force F at a specified change of frequency characteristic f_{char}.

4. Method according to claim 1 or 3 characterised in that repeated readings of the contact force F and frequency characteristic are made while the contact body is pressed against the eye, whereby a series of measurement values are obtained.

5. Method according to any of claims 1-4 characterised in that the frequency characteristic is described by one of either the change in resonance frequency f or the change in phase φ.

6. Device for measuring the internal pressure in an eye, the so-called intraocular pressure, having a contact body (4) for pressing against the eye (1) and a means (3) of determining the force with which the contact body is pressed against the eye, characterised in that the contact body (4) is part of a system oscillating in resonance, and that the resonance system is connected to a means (9) for reading the frequency characteristic of the system.

7. Device according to claim 6 c h a r a c t e r i s e d in that the system oscillating in resonance includes a piezo-electric element.

8. Device according to claim 6 or 7 c h a r a c t e r i s e d in that the contact body (4) has a flat surface of contact (5) and that the contact surface preferably has a structure or a pattern.

9. Device according to any of claims 6 to 8 c h a r a c t e r i s e d in that a means is arranged for calculating the change in frequency characteristic.

10. Device according to any of claims 6 or 7 c h a r a c t e r i s e d in that the contact surface (5) is concave, preferably with a radius of curvature that exceeds the radius of curvature of the surface of the eye against which it is intended to be pressed.

11. Use of the device according to claim 6 for measuring pulsation in the intraocular pressure.

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(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(71) Applicants and
(72) Inventors: EKLUND, Anders [SE/SE]; Allmogevägen 10, S-905 96 Umeå (SE). LINDAHL, Olof [SE/SE]; Gökropsvägen 10H, S-906 51 Umeå (SE).

(74) Agents: KARLSSON, Per, Tomas et al.; AB Stockholms Patentbyrå, Zacco & Bruhn, Box 23101, S-104 35 Stockholm (SE).

(81) Designated States *(national)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW.

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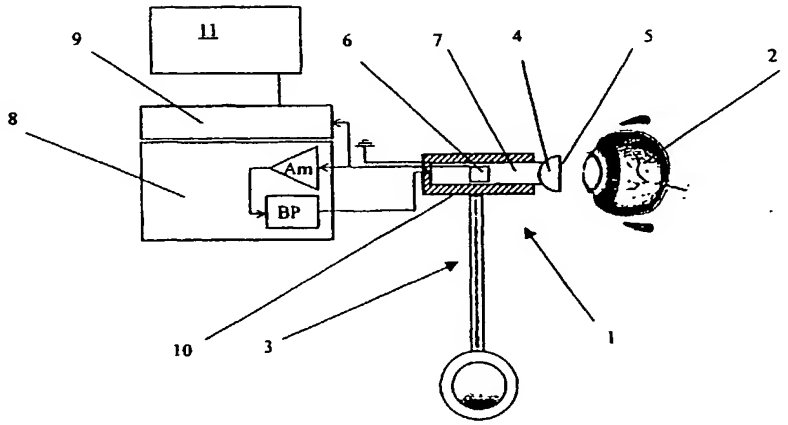
Published:
— *With international search report.*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND DEVICE FOR DETERMINING THE INTRAOCULAR PRESSURE, BY MEASURING THE CHANGING OF THE FREQUENCY CHARACTERISTICS



(57) Abstract: The present invention relates to a method and a device for measuring the pressure *p* in an eye, the so-called intraocular pressure. The method includes a contact body with a known geometry being pressed against the eye with a gradually increasing contact force *F* and that when the area of deformation of the eye *A* can be determined, the pressure can be obtained from the relation *P=F/A*, whereby the frequency characteristic of a contact body associated with a sensor system oscillating in resonance is read, the contact body is pressed against the eye to form a new system oscillating in resonance, the contact force and frequency characteristic for the new system is read, and the change in frequency characteristic is calculated. In this way, the pressure of the eye can be determined since the sought deformation area *A* is a function of the change *A(f¿ch ar?)*. The device has a contact body (4) for pressing against the eye (1) and a means (3) of determining the force with which the contact body is pressed against the eye, whereby the contact body (4) is part of a system oscillating in resonance, and the resonance system is connected to a means (9) for reading the frequency characteristic of the system.

WO 01/15594 A1

WO 01/15594

PCT/SE00/01628

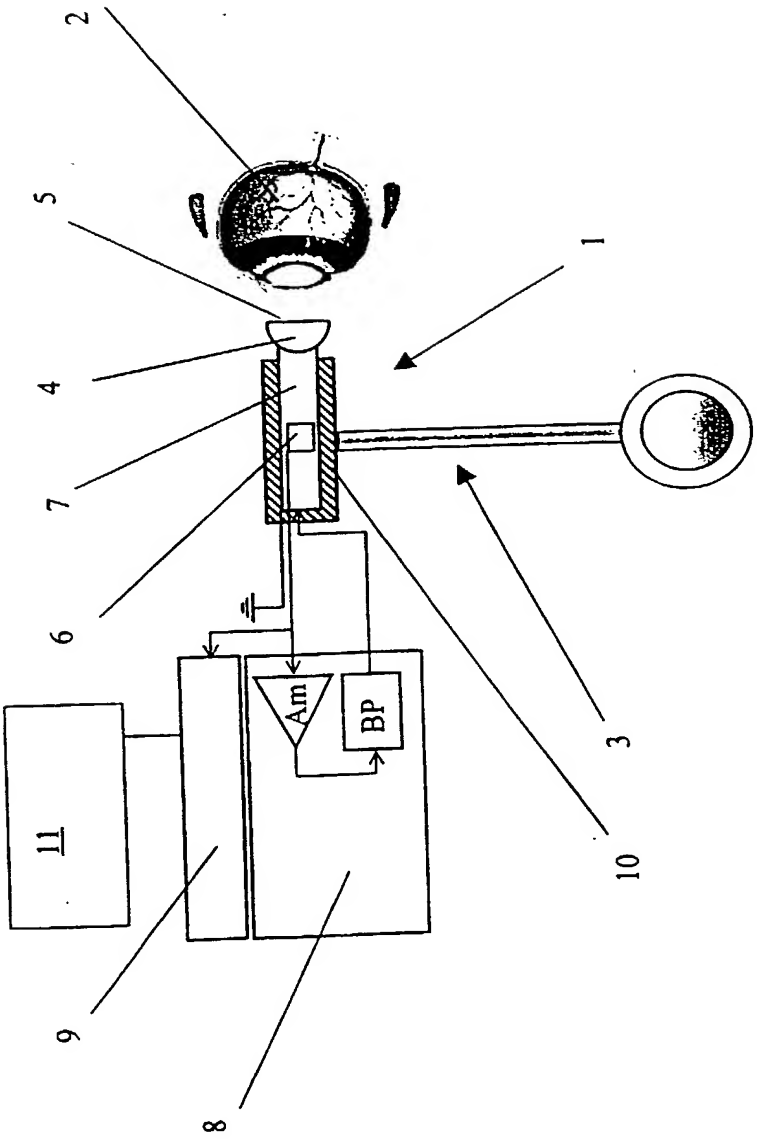


fig. 1

10069115.061002#3

ATTORNEY/DOCKET NO **EKLU3001/JEK**

DECLARATION FOR PATENT APPLICATION AND APPOINTMENT OF ATTORNEY

As a below named inventor, I hereby declare that my residence, post office address and citizenship are as stated below next to my name; I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention (Design, if applicable) entitled:

METHOD AND DEVICE FOR DETERMINING THE INTRAOCULAR PRESSURE, BY MEASURING THE CHANGING OF THE FREQUENCY CHARACTERISTICS

the specification of which (check one):

☐ is attached hereto, or ☒ was filed on: **24 August 2000** as U.S. Application Number or PCT International Application Number: **(PCT/SE00/01628) 10/069,115** and (if applicable) was amended on:

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment(s) referred to above. I acknowledge the duty to disclose information which is material to patentability as defined in *Title 37, Code of Federal Regulations, §1.56*. I hereby claim foreign priority benefits under *Title 35, United States Code §119* of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed.

PRIOR FOREIGN APPLICATION(S)			PRIORITY CLAIMED	
Number	Country	Day/Month/Year Filed	Yes	No
9903099-1	Sweden	31 August 1999	X	

☐ Additional Priority Application(s) Listed on Following Page(s)

I HEREBY CLAIM THE BENEFIT UNDER TITLE 35 U.S. CODE §119(E) OF ANY U.S. PROVISIONAL APPLICATIONS LISTED BELOW.	
Application Number	Day/Month/Year Filed

☐ Additional Provisional Application(s) Listed on Following Page(s)

I hereby claim the benefit under *Title 35, United States Code, §120* of any United States application(s) or PCT international application(s) designating The United States of America listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in that/those prior application(s) in the manner provided by the first paragraph of *Title 35, United States Code, §112*, I acknowledge the duty to disclose information which is material to patentability as defined in *Title 37, Code of Federal Regulations, §1.56* which became available between the filing date of the prior application(s) and the national or PCT international filing date of this application:

Application Number	Filing Date	Status - Patented, Pending or Abandoned

☐ Additional US/PCT Priority Application(s) listed on Following Page(s)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under *section 1001 of title 18 of the United States Code* and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: I (We) hereby appoint as my (our) attorneys, with full powers of substitution and revocation, to prosecute this application and transact all business in the Patent and Trademark Office connected therewith: J. Ernest Kenney, Reg. No. 19,179; Eugene Mar, Reg. No. 25,893; Richard E. Fichter, Reg. No. 26,382; Thomas J. Moore, Reg. No. 28,974; Joseph DeBenedictis, Reg. No. 28,502; Benjamin E. Urcia, Reg. No. 33,805; and

I(we) authorize my(our) attorneys to accept and follow instructions from **Zacco Stockholms Patentbyra** regarding any matter related to the preparation, examination, grant and maintenance of this application, any continuation, continuation-in-part or divisional based thereon, and any patent resulting therefrom, until I(we) or my(our) assigns withdraw this authorization in writing.

Send correspondence to: **Customer 23364**

BACON & THOMAS, PLLC
625 Slaters Lane - 4th Floor
Alexandria, VA 22314-1176

Telephone Calls to: **J. Ernest Kenney**
(703) 683-0500

FULL NAME OF FIRST OR SOLE INVENTOR	CITIZENSHIP
Anders EKLUND	Sweden
RESIDENCE ADDRESS Allmogevägen 10, S-905 96 Umeå, Sweden	POST OFFICE ADDRESS IS THE SAME AS RESIDENCE ADDRESS UNLESS OTHERWISE SHOWN BELOW SEX
DATE X May 5, 2002	SIGNATURE X Anders Eklund

☒ *See following page(s) for additional joint inventors.*

CONTINUATION OF DECLARATION FOR PATENT APPLICATION AND APPOINTMENT OF ATTORNEY

PRIOR FOREIGN APPLICATION(S) (35 USC §119)			PRIORITY CLAIMED	
Number	Country	Day/Month/Year Filed	Yes	No

PRIOR PROVISIONAL APPLICATIONS 35 U.S. CODE §119(E)	
Application Number	Day/Month/Year Filed

PRIOR U.S. OR PCT INTERNATIONAL APPLICATIONS (35 U.S. CODE §120)		
Application Number	Filing Date	Status - Patented, Pending or Abandoned

2-00 FULL NAME OF JOINT INVENTOR Olof LINDAHL	CITIZENSHIP Sweden
RESIDENCE ADDRESS Gökropsvägen 10H, S-906 51 Umeå, Sweden	POST OFFICE ADDRESS IS THE SAME AS RESIDENCE ADDRESS UNLESS OTHERWISE SHOWN BELOW SEX
DATE X May 5, 2002	SIGNATURE X [signature]

FULL NAME OF JOINT INVENTOR	CITIZENSHIP
RESIDENCE ADDRESS	POST OFFICE ADDRESS IS THE SAME AS RESIDENCE ADDRESS UNLESS OTHERWISE SHOWN BELOW
DATE	SIGNATURE

FULL NAME OF JOINT INVENTOR	CITIZENSHIP
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DATE	SIGNATURE

☐ *See following pages for additional joint inventors/priority applications.*